

Serial No. 10/771,778
Docket No. 8493D
Response date September 14, 2005
Reply to Office Action of June 14, 2005

REMARKS

Status of claims

Applicants thank the Examiner for the consideration given to the present application. Claim 3 has been canceled without prejudice. Claim 5 has been amended, support of which may be found in the specification and figures. Claims 13 and 14 have been amended to delete the term "the" in order to correct a typographical error. Claims 1, 2, and 4-14 are pending in the present application. No new matter has been added to the claims.

Amendment to the Specification

The Examiner objected to the specification because he requested the status of the parent application (now U.S. Patent 6,733,827) to be updated. Accordingly, Applicants have made the appropriate correction to the specification to reflect the current status of the parent application U.S. Application No. 09/832,580 filed May 11, 2001, as now issued U.S. Patent No. 6,733,827. In addition, Applicants note that the present application is more properly a continuation of U.S. Application No. 09/832,580 (U.S. 6,733,827), which is reflected in the amendment to the specification as well.

Rejections under 35 U.S.C. §112

Claim 5 has been rejected under 35 U.S.C. §112 as being indefinite. The Examiner asserted that the term "filter particle" is defined by Applicants as "an individual member or piece which forms at least part of a filter material," which appears to exclude screen and woven or non-woven fabrics because these, according to the Examiner, are made of more than one member. The Examiner further asserted that claim 5 states that the term includes screens and woven or non-woven fabrics. Applicants respectfully traverse this rejection.

Applicants point to page 5, lines 18-20, of the specification, which states, "Further, the filter particles can also be provided in complex forms such as webs, screens, meshes, non-wovens, and wovens, which may or may not be formed from the simple forms described above." Based upon the disclosure from the specification set forth above, Applicants submit that there is no discrepancy between the specification and claim 5, and thus claim 5 is definite. However, in

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order to expedite prosecution of the present application, Applicants have amended claim 5 to delete the term "particle" and insert the term "material." In addition, Applicants amended claim 5 to recite that the screen, ceramic fiber, woven, non-woven, or mixtures thereof are "formed at least partially from complex forms of the filter particles." Support for this language can be found on page 5, lines 18-20 of the specification, thus no new matter has been added. Accordingly, Applicants respectfully request the rejection of claim 5 under 35 U.S.C. §112 be withdrawn.

Rejections under 35 U.S.C. §103

Claims 1-2 and 4-12 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Economy et al. (U.S. Patent No. 5,834,114) in view of Buzzelli (U.S. Patent No. 3,650,834). The Examiner asserted that Economy et al. teach a method for forming a filter material that includes all of the steps as claimed by Applicants. However, the Examiner acknowledged that Economy et al. do not teach that the carbonizable precursor is a lignosulfonate. The Examiner also stated that Economy et al. are open to the use of other materials that will produce carbonizable coatings and that Buzzelli teaches the formation of an activated carbon electrode, which is formed by charring and activating lignosulfonate. Thus, the Examiner concluded it would have been obvious to have used the lignosulfonate of Buzzelli with the process of Economy et al. Also, claims 13-14 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Economy et al. in view of Buzzelli, as applied to claim 1, above, and further in view of Buelow et al. (U.S. Patent 6,006,797).

Applicants respectfully traverse this rejection and submit that the Examiner has not met his burden of establishing a prima facie case of obviousness under §103. MPEP §2145. In order to establish a prima facie case of obviousness under §103, the Examiner has the burden of showing, by reasoning or evidence, that: 1) there is some suggestion or motivation, either in the references themselves or in the knowledge available in the art, to modify that reference's teachings; 2) there is a reasonable expectation on the part of one of ordinary skill in the art that the modification or combination has a reasonable expectation of success; and 3) the prior art references (or references when combined) teach or suggest all the claim limitations. MPEP §2145.

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First, Applicants respectfully submit that Applicants' independent claim 1 recites, *inter alia*, a process for forming a filter material that includes the following steps: i) coating a filter particle with a coating that comprises a lignosulfonate; ii) carbonizing the coating; and iii) activating the coating.

Applicants submit that there is no motivation or suggestion, either in the references themselves or in the knowledge available in the art, to combine Buzzelli with Economy et al. Economy et al. pertains to the creation of fibers for the absorption of contaminants either in air or water. As such, Economy et al. provide a fiber suitable for absorption of contaminants wherein the fiber is coated with a phenolic resin, the resin is exposed to a cross-linking agent and then heated to carbonize the resin, and the coated fiber being exposed to an etchant to activate the coated fiber. (col. 3, lines 8-54). The Examiner acknowledged that Economy et al. do not teach that the carbonizable precursor is a lignosulfonate. To cure Economy et al.'s deficiency, the Examiner turned to Buzzelli. Buzzelli pertains to the manufacture of batteries. As such, Buzzelli teaches the cathode in an electrical energy storage device "may be composed of porous carbon," wherein the carbon employed can be derived from activated sodium lignosulfonate. (col. 1, lines 44-45 and col. 2, lines 11-14). No where in Buzzelli does it suggest that the electrode material (i.e., carbon derived from activated sodium lignosulfonate) may be used as a coating for filter particles or provide any motivation as to why (what benefit) one would use this electrode material for a coating on a filter particle.

In addition, Applicants respectfully assert that the combination of Economy et al. and Buzzelli is improper as the references themselves are non-analogous. In order to rely on a reference as a basis for rejection of an applicants' invention, the reference must either be in the field of the Applicants' endeavor or, if not, then be reasonably pertinent to the particular problem with which the invention was concerned. *In re Oetiker*, 977 F.2d 1443, 1446, 24 USPQ2d 1443, 1445 (Fed. Cir. 1992); See also *In re Deminski*, 796 F.2d 436, 230 USPQ 313 (Fed. Cir. 1986). A reference is reasonably pertinent if, even though it may be in a different field from that of the inventor's endeavor, it is one which, because of the matter with which it deals, logically would have commended itself to an inventor's attention in considering his problem. *In re Clay*, 966 F.2d 656, 659, 23 USPQ2d 1058, 1060-61 (Fed. Cir. 1992); See also *Wang Labs. Inc. v. Toshiba Corp.*, 993 F.2d 858, 26 USP!2d 1767 (Fed. Circ. 1993).

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Applicants first assert that water and air filters are not in the same field as the manufacture of batteries. Applicants further assert that Buzzelli deals with making a cathode for a battery from porous carbon that is derived from a material such as lignosulfonate. Buzzelli is completely silent as to any reference to coatings made of carbon, especially coatings comprising a lignosulfonate. And although, Buzzelli teaches the use of lignosulfonate, only as one of several possible options, it never teaches nor suggests the benefits or use of lignosulfonate to coat a carbon particle for use in filters to remove contaminants from water. For example, the large amount of mesopores and macropores formed in the activated carbon after the coating comprising lignosulfonate on the filter particles has been carbonized and activated. Such manufacturing of batteries, void of any sort of teachings to filtering mechanisms, processes, or coatings for filter particles, would not command the attention of Applicants when considering coatings for coating filter particles for water purification.

Applicants first respectfully submit that it would not even be "obvious to try" to combine the cathode containing carbon derived from sodium lignosulfonate of Buzzelli with the phenolic resin coated filter (that has been exposed to a cross-linking agent) of Economy et al. at the time of the Applicants invention. Notwithstanding, as found by the Federal Circuit Court in *In re Fine*, "Whether a particular combination might be "obvious to try" is not a legitimate test of patentability. *In re Fine*, 837 F.2d 1071, 1075 (Fed. Cir. 1988) (citing *In re Geiger*, 815 F.2d 686, 688 (Fed. Cir. 1987). In *In re Fine*, the claimed invention combined nitric oxide with ozone to produce nitrogen dioxide and included three major components: 1) a gas chromatograph; 2) a converter which converts the nitrogen compound effluent output of the chromatograph into nitric oxide; and 3) a detector for measuring the level of nitric oxide. *In re Fine*, 1072.

The Examiner applied a reference (the "Eads reference") that taught a sulfur detecting system that converted sulfur into sulfur dioxide and included a sulfur dioxide detector having a chromatograph. *Id.*, 1073. The Examiner combined the Eads reference with a second reference (the "Warnick reference"), which taught a nitric oxide detector that measured the reaction between nitric oxide and ozone. *Id.* In finding that the invention was non-obvious over the Eads and Warnick references, the Court stated that there is no suggestion in the Eads reference, which focuses on the unique difficulties inherent in the measurement of sulfur, to use that arrangement to detect nitrogen compounds. *Id.* Similarly, Applicants respectfully submit that Economy et al.

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and Buzzelli, singularly or in combination, lack any suggestion that focuses on the unique difficulties inherent in the use of activated carbon for filter particles, let alone coating a filter particle with a coating comprising lignosulfonate.

Second, Applicants respectfully submit that there is no reasonable expectation of success. As set forth in the specification, Applicants unexpectedly found that lignosulfonate-coated filter particles, when carbonized and activated, have a large amount of mesopore and/or macropore volume. (page 6, lines 12-14). And, these large number of mesopores and/or macropores provide more convenient absorption sites for the pathogens, their fimbriae, and surface polymers (e.g., proteins, lipopolysaccharides, carbohydrates, and polysaccharides) that constitute the outer membranes, capsids, and envelopes of the pathogens. (page 6, lines 14-18). Neither Economy et al. nor Buzzelli teach or suggest these results or applications and thus one of ordinary skill in the art at the time of the invention would not have had any reasonable expectation of success in combining these two references.

Third, even if improperly combined, Applicants submit that there is no teaching of coating a filter particle with a coating comprising a lignosulfonate in Economy et al. or Buzzelli, singularly or in combination. As set forth above, Economy et al. teach coating a filter with a phenolic resin that has been exposed to a cross-linking agent, which is completely different from a coating comprising lignosulfonate that has been carbonized and activated. Moreover, Buzzelli teaches making a cathode from a porous carbon that is derived from lignosulfonate. However, Buzzelli is completely void of any teaching or suggestion to use the cathode material (lignosulfonate) as a coating, especially a coating for filter particles. When combined, the references do not produce the Applicants' invention as claimed and thus the references do not teach or suggest each and every element as claimed by the Applicants' claim 1. Therefore Applicants respectfully submit that it would not have been obvious to one of ordinary skill in the art at the time of the present invention to combine Buzzelli with Economy et al. Accordingly, Applicants respectfully request the rejection of independent claim 1 under 35 U.S.C. §103 be withdrawn. As claims 2 and 4-14 depend from independent claim 1, Applicants request that the rejection of these claims be withdrawn as well.

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Rejections Under 35 USC §101 Double Patenting

Claim 3 has been rejected under 35 U.S.C. §101 as claiming the same invention as that of claim 1 of prior U.S. Patent No. 6,733,827. Accordingly, Applicants have canceled claim 3 without prejudice. Thus, Applicants respectfully request the rejection under 35 U.S.C. §101 double patenting be withdrawn.

Rejections Under Non-Statutory Obviousness-Type Double Patenting

Claims 1-2 and 4-14 have been rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-13 of U.S. Patent No. 6,733,827. Applicants respectfully traverse this rejection because the claims of the present invention are patentably distinct from the claims of the cited patent.

However, to simplify the issues in the present application, Applicants concurrently submit with this response the appropriate Terminal Disclaimer over U.S. patent No. 6,733,827. In submitting this Terminal Disclaimer, Applicants state for the record that this Disclaimer is not an admission of obviousness in view of the cited U.S. patent or applications. *Quad Envtl. Corp. v. Union San. Dist.*, 20 USPQ2d 1392 (Fed. Cir. 1991). Therefore, Applicants respectfully request withdrawal of the obviousness-double patenting rejections.

CONCLUSION

Applicants respectfully submit that the present application is in condition for allowance. The Examiner is encouraged to contact the undersigned to resolve efficiently any formal matters or to discuss any aspects of the application or of this response. Otherwise, early notification of allowable subject matter is respectfully solicited.

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Respectfully submitted,

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